Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Officer and membership roster for each study section, click on the study section roster under the study section name within an IRG listed below or go to the study section index (study sections listed alphabetically) and click on the specified roster next to the name of the study section.

Cardiovascular and Respiratory Sciences IRG [CVR]

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- Cardiac Contractility, Hypertrophy, and Failure Study Section [CCHF]
- Cardiovascular Differentiation and Development Study Section [CDD]
- Clinical and Integrative Cardiovascular Sciences Study Section [CICS]
- Electrical Signaling, Ion Transport, and Arrhythmias Study Section [ESTA]
- Lung Cellular, Molecular, And Immunobiology Study Section [LCMI]
- Lung Injury, Repair, and Remodeling Study Section [LIRR]
- Myocardial Ischemia and Metabolism [MIM]
- Respiratory Integrative Biology and Translational Research [RIBT]
- Physiology and Pathobiology of Organ Systems Fellowship Special Emphasis Panel [F10S]

Cardiac Contractility, Hypertrophy, and Failure Study Section [CCHF]

[CCHF Membership Roster] [CCHF Meeting Rosters]

The Cardiac Contractility, Hypertrophy, and Failure [CCHF] Study Section reviews applications that involve basic, applied and translational aspects of heart function, homeostasis and disease. Applications focus on contractile function and dysfunction, including studies of hereditary and acquired cardiac hypertrophy and failure, at levels ranging from molecular assemblies to the intact organ to translation of novel therapies to human. Specific areas covered by CCHF:

- The basic molecular and cellular mechanisms underlying cardiac hypertrophy and failure: myocyte growth, proliferation, metabolism and apoptosis; receptor signaling; transcriptional pathways; inflammatory/ cytokine-mediated processes.
- Systolic and diastolic function/dysfunction: adaptation to abnormal hemodynamic load and ventricular mechanics; mechanical signal transduction; stress-strain relationships; effects of therapeutic interventions such as pacing, ventricular assist devices and others; valvular heart disease.
- Myocardial remodeling and fibrosis: extracellular matrix reorganization and collagen metabolism; cytoskeleton.

- Cardiac myocyte contractile function: sarcomeric proteins; calcium regulation and signaling; calcium-force relationship; arrythmia-related causes of remodeling and heart failure.
- Cardiac repair: cell-based and gene therapy as it relates to contractility and remodeling; capillary density; changes in ventricular and cellular function that result from heart transplantation.
- Genetic cardiomyopathies; genotype-phenotype correlation; genomic and proteomic approaches to cardiac hypertrophy and failure.

Study sections with most closely related areas of similar science listed in rank order are:

Myocardial Ischemia and Metabolism [MIM]
Cardiovascular Differentiation and Development [CDD]
Electrical Signaling, Ion Transport, and Arrhythmias [ESTA]
Surgical Sciences, Biomedical Imaging, and Bioengineering [SBIB] IRG
Biology of Development and Aging [BDA] IRG

TOP

Cardiovascular Differentiation and Development Study Section [CDD]

[CDD Membership Roster] [CDD Meeting Rosters]

The Cardiovascular Differentiation and Development [CDD] study section reviews applications related to development and differentiation of heart, vascular and lymphatic system. A wide variety of technologies are encouraged including human genetics, as well as cellular, molecular, genetic, genomic/proteomic and transgenic approaches in different model organisms such as mouse, chick, zebrafish, xenopus and drosophila. Specific areas covered by CDD:

- Cardiac development: commitment and differentiation of cardiac cell phenotypes; looping morphogenesis; cardiac chamber specification; valvulogenesis; epicardial and coronary vessel development; neural crest in developing heart and great vessels; cardiac conduction system; embryonic cell processes, cellular signaling and transcriptional regulation in heart development.
- Vascular development: origin, commitment and differentiation of endothelial and smooth muscle cell populations; vasculogenesis and angiogenesis; patterning and organization of the vascular system; vascular remodeling in the postnatal organism; neovascularization in adults recapitulating embryonic and fetal processes.
- Lymphatic development: differentiation, development and organization of the lymphatic vascular system; molecular and cellular mechanisms of lymphangiogenesis; lymphedema.
- Stem cells: differentiation of embryonic and adult stem cells into cardiomyocytes, endothelium, smooth muscle and other components of the cardiovascular system; resident stem cells in regeneration and repair of myocardium and vasculature in vivo.
- Human genetics of cardiac and vascular malformations; studies related to human congenital defects of cardiovascular system, modeling of human developmental cardiovascular diseases in different organisms.

Study sections with most closely related areas of similar science listed in rank order are:

Vascular Cell and Molecular Biology [VCMB]
Development-2 Study Section [DEV2]
Myocardial Ischemia and Metabolism [MIM]
Cardiac Contractility, Hypertrophy and Failure [CCHF]
Electrical Signaling, Ion Transport and Arrhythmias [ESTA]

TOP

Clinical and Integrative Cardiovascular Sciences Study Section [CICS]

[CICS Membership Roster] [CICS Meeting Rosters]

The Clinical and Integrative Cardiovascular Sciences [CICS] Study Section considers patient oriented research involving the cardiovascular system and related regulatory organ systems. Patient oriented research is defined as studies involving investigation of the cardiovascular system of humans, including autonomic physiology and exercise cardiovascular studies and extending to include surgery and pediatrics. Clinical trials that are secondary prevention focusing on outcomes may be assigned to CICS. Applications for randomized multi-center clinical trials are not appropriate for CICS. Specific areas covered by CICS:

- Human clinical studies (and appropriate translational animal studies): including pediatric populations, mechanisms and consequences of disease: Investigations may include: coronary physiology and pharmacology, cardiac electrophysiology, regional circulations, hemodynamic studies, cardiac mechanics, and genetic considerations in cardiovascular studies. Disease states can include: cardiac or vascular ischemia, hypertension, diabetes, thyroid disease, atherosclerosis, general inflammation, or hypercholesterolemia.
- Modulation of cardiac/cardiovascular responses and adaptations: influence of acute and chronic exercise on metabolic function and cardiac, vascular smooth muscle, and vascular endothelial function(s). Pregnancy and aging may be considered modulatory influences.
- Neural control of the cardiovascular system: includes healthy and diseased populations and central and peripheral autonomic physiology, pharmacology, and receptor mechanisms.
- Clinical, population, or translational studies of the responses of the cardiovascular system to trauma or surgery: arrhythmias associated with cardiac surgery or cardiopulmonary bypass, cardiac sudden death, resuscitation, stenting, pacemakers;,cardiovascular injury and repair, and myocardial ischemia/reperfusion injury.
- Environmental stresses and modifying conditions/stimuli: smoking, altitude, microgravity, heat, cold, bed rest/deconditioning, and environmental pollution in patients.

Study sections with most closely related areas of similar science listed in rank order are:

Cardiac Contractility, Hypertrophy, and Failure [CCHF]
Hypertension and Microcirculation Study Section [HM]
Atherosclerosis and Inflammation of the Cardiovascular System [AICS]
Cardiovascular and Sleep Epidemiology [CASE]
Bioengineering, Technology, and Surgical Sciences [BTSS]

TOP

Electrical Signaling, Ion Transport, and Arrhythmias Study Section [ESTA]

[ESTA Membership Roster] [ESTA Meeting Rosters]

The Electrical Signaling, Ion Transport and Arrhythmias study section reviews both basic and clinical applications concerned with cardiac and vascular electrical and mechanical activity, excitation-contraction coupling, electrophysiological aspects of normal and abnormal cardiovascular function, arrhythmias and sudden death. Studies involve humans and animals, in vitro and in vivo systems, molecular, genetic, electrophysiological, biochemical, biophysical, bioengineering, and computational approaches. Emphasis is on ion transfer and transport mechanisms affecting cardiac rhythm disorders, impulse propagation, and cardiac and vascular smooth muscle contractility in hypertrophy, heart failure, ischemia, hypertension, congenital heart disease, and heart transplant.Specific Areas Covered by ESTA:

- Excitability, electrical propagation and repolarization in normal and diseased hearts, structure function of cardiac and vascular ion channels, ion exchangers, ion pump, connexins, excitation-contraction coupling proteins, basis of propagation, conduction system, and intercellular communication.
- Mediators and modulators of cardiac contractility, calcium homeostasis, calcium regulation, calcium sensitive proteins, neural regulation, redox regulation, genes and proteins that modulate cardiac excitability and contractility, regulation of ion channel function and expression.
- Cellular mechanisms of arrhythmogenesis, identification of genes and proteins, electrophysiological consequences of acquired heart diseases (e.g. ischemia, hypertension, heart failure, hypertrophy etc.).

- Computational techniques to predict arrhythmias, mathematical modeling of ion channels, myocytes, multi-cellular tissue and the whole heart, development and evaluation of interventions and devices to diagnose and treat cardiac rhythm disorders.

Study sections with most closely related areas of similar science listed in rank order are:

Cardiac Contractility, Hypertrophy, and Function [CCHF]
Myocardial Ischemia and Metabolism [MIM]
Vascular, Cell and Molecular Biology [VCMB]
Bioengineering, Technology and Surgical Sciences [BTSS]
Modeling and Analysis of Biological Systems [MABS]

TOP

Lung Cellular, Molecular, And Immunobiology Study Section [LCMI]

[LCMI Membership Roster] [LCMI Meeting Rosters]

The Lung Cellular, Molecular, and Immunobiology [LCMI] Study Section reviews grant applications designed to study the genetic, molecular, and cellular basis of normal respiratory biology, and the alterations in these processes in inflammatory and immune lung disorders. The study section will consider applications using molecules, cells, tissues, organs, animal models, and/or human investigations that address the identity, function, and products of the cells that populate the airways, the regulation and dysregulation of innate host defense mechanisms and the adaptive immune system in health and disease as they relate to the respiratory system. Topics may include the inflammatory and immune mechanisms that contribute to the pathogenesis of a variety of airway diseases of the lung, including, but not limited to, Asthma, Cystic Fibrosis, Chronic Obstructive Pulmonary Disease (COPD), and Tuberculosis. Specific areas covered by LCMI:

- Asthma, including: the molecular and cellular mechanisms, pathology and remodeling of airway epithelial cells and airway smooth muscle; cytokine transport and regulation; effects of oxidant and leukotriene products on the airways; T cell secretions and regulation; adrenergic agonists and receptors; and genetic predisposition.
- Cystic Fibrosis, including molecular mechanisms Cystic Fibrosis Transmembrane Conductance Regulator in airway epithelial cells and bacterial interactions with the airways in Cystic Fibrosis.
- Airway Epithelial Cell Biology, including regulation of secretion of mucins, control of cilia, and development of goblet cell metaplasia.
- Host Defense of the lung, including pulmonary interactions and reactions to aspergillus, influenza, pneumonia, pseudomonas, tuberculosis, rhinovirus, Respiratory Syncytial Virus and other pathogens in the lung. Also, involvement of surfactant proteins A and D in lung host defense:
- Immunology of the lung, including biology, regulation and interactions of alveolar macrophages, T lymphocytes, neutrophils, eosinophils, dendritic cells, mast cells, and B lymphocytes. Also, immunological effects of Lung Transplantation.
- COPD, including the effects of smoking on airway epithelia cells, and airway epithelia cell remodeling in chronic bronchitis.

Study sections with most closely related areas of similar science listed in rank order are:

Lung Injury, Repair, and Remodeling Study Section [LIRR]
Respiratory Integrative Biology and Translational Research [RIBT]
Immunity and Host Defense Study Section [IHD]
Innate Immunity and Inflammation Study Section [III]
Host Interactions with Bacterial Pathogens Study Section [HIBP]

TOP

Lung Injury, Repair, and Remodeling Study Section [LIRR]

[LIRR Membership Roster] [LIRR Meeting Rosters]

The Lung Injury, Repair, and Remodeling [LIRR] Study Section reviews applications that focus on lung injury, repair, remodeling, and barrier function in non-vascular pulmonary tissue or cells, and lung development and regeneration. Among the mechanistic processes considered are cellular processes including signal transduction, control of gene expression, cell cycle and cell death mediators, and proteolytic mechanisms. Integrative processes include inflammation, cell trafficking, cell-cell interactions, regulation of extracellular matrix, and effects of blood components such as coagulation factors and complement. Specific areas covered by LIRR:

- Lung injury: Includes, but not limited to lung injury caused by reactive oxygen and nitrogen species, hypoxia, sepsis, mechanical ventilation, alcohol, and environmental and other toxic agents. This would include studies addressing lung epithelium injury, leukocyte contributions to lung injury, normal and abnormal lung permeability, and mechanisms of resolution, repair, and remodeling.
- Pulmonary fibrosis and interstitial lung diseases: Includes granulomatous diseases (such as sarcoidosis), idiopathic pulmonary fibrosis, interstitial pneumonias, autoimmune lung diseases, and lymphangioleiomyomatosis. This would also include involvement of mesenchymal stem cells, epithelium dysfunction, and epithelial-mesenchymal transition.
- Lung fluid balance: Includes epithelial (ion channels, aquaporins, etc.), interstitium, and lymphatic function and pulmonary edema, when not primarily restricted to the pulmonary vasculature.
- Pleural diseases: Includes infections, dysplasias, hyperplasias, and other non-malignant proliferative disorders and inflammatory processes.
- Lung development and maturation: Includes mechanisms of normal and abnormal lung development, differentiation, and neonatal and pediatric lung syndromes and diseases (e.g. meconium aspiration syndrome and bronchopulmonary dysplasia).
- Stem cells: Includes stem cell biology in the context of lung development and repair/regeneration. This includes isolation and characterization of lung progenitor cells, development of in vitro culture systems that allow expansion of lung progenitor cells and differentiation of embryonic stem cells and adult stem cells into lung epithelium, endothelium, and other components of the respiratory system, tissue engineering, and stem cell based therapy.
- Pulmonary surfactant: Includes expression and post-translational processing and trafficking of surfactant proteins A, B, C and D in lung epithelium, surfactant lipids, lung diseases associated with surfactant dysfunction and/or deficiency, and surfactant replacement therapy.
- Environmental and occupational lung diseases and inhalation and respiratory toxicology.

Study sections with most closely related areas of similar science listed in rank order are:

Lung Cellular, Molecular, and Immunology [LCMI]
Respiratory Integrative Biology and Translational Research [RIBT]
Systemic Injury by Environmental Exposure [SIEE]
Surgery, Anesthesiology, and Trauma [SAT]
Genetics of Health and Disease [GHD]

TOP

Myocardial Ischemia and Metabolism [MIM]

[MIM Membership Roster] [MIM Meeting Rosters]

The Myocardial Ischemia and Metabolism [MIM] Study Section reviews applications involving basic and applied aspects of myocardial ischemia/reperfusion, coronary circulation, and myocardial metabolism. It includes the review of studies using molecular, genetic, cellular, biochemical, pharmacological, genomic, proteomic, and physiological approaches to define normal and pathological processes. MIM examines investigations at all levels of organization, ranging from in vitro models of simulated ischemia in isolated cells to whole animal models. Specific areas covered by MIM:

- Mechanisms of ischemia/reperfusion tissue injury, myocardial stunning, infarction, and hibernation.
- Cardioprotection, cardiac repair and regeneration including stem cell therapy.
- Control of coronary blood flow in health and disease; post-ischemic coronary vascular abnormalities; development of collateral circulation in response to myocardial ischemia.
- Signal transduction mechanisms of myocardial ischemia/reperfusion injury, preconditioning, and inflammation, including changes in receptor function, kinase activity, and transcription factor activity.

- Role of reactive oxygen species, nitric oxide and other reactive nitrogen species, cytokines, chemokines, and white blood cells in myocardial ischemia/reperfusion injury.
- Metabolism and energetics in normal myocardium and in acquired heart disease: carbohydrate and lipid metabolism, glycolysis, oxidative phosphorylation, substrate interaction, regulation of substrate transport and fluxes, and mitochondrial function.

Study Sections with most closely related areas of similar science listed in rank order are:

Cardiac Contractility, Hypertrophy, and Function [CCHF]
Clinical and Integrative Cardiovascular Sciences [CICS]
Bioengineering, Technology and Surgical Sciences [BTSS]
Cellular Mechanisms of Aging and Development [CMAD]

TOP

Respiratory Integrative Biology and Translational Research [RIBT]

[RIBT Membership Roster] [RIBT Meeting Rosters]

The Respiratory Integrative Biology and Translational Research [RIBT] Study Section reviews applications that deal with pulmonary vascular physiology; neural control of breathing; respiratory biophysics, biomechanics, imaging, and transport; sleep apnea in relation to upper airways and respiratory control; clinical studies of lung disease; and studies linking genetic and physiologic aspects of lung disease. Methods may include molecular and cellular approaches, normal and genetically modified animal models, human subjects and mathematical modeling. Emphasis is often on physiologic and integrative approaches. Specific areas covered by RIBT:

- Aspects of pulmonary vascular biology and disease including pulmonary hypertension, angiogenesis, normal and abnormal endothelial and vascular smooth muscle cell biology, mechanisms of vasoreactivity, barrier function of the vascular cells in relation to lung fluid balance, and the involvement of reactive oxygen and nitrogen species as well as hypoxia in these processes.
- Neural control of breathing including central and peripheral chemoreceptors, central neural processes, airway receptors, and neural aspects of dyspnea.
- Respiratory biophysics, biomechanics, and imaging of the lung and chest wall, including mechanical ventilation, various imaging techniques, aerosol inhalation, and gas transport.
- Upper airway physiology and control of respiration in relation to normal and abnormal breathing during sleep (e.g., SIDS, sleep apnea).
- Human subjects studies related to normal and abnormal pulmonary physiology including phase 1 and 2 clinical trials as well as single site phase 3 trials; genetic studies linked to the physiology of lung disease.

Study sections with most closely related areas of similar science listed in rank order are:

Lung Injury, Repair, and Remodeling [LIRR]
Lung Cellular, Molecular, and Immunobiology [LCMI]
Infectious Diseases, Reproductive Health, Asthma and Pulmonary Conditions [IRAP]
Sensorimotor Integration [SMI]
Biological Rhythms and Sleep [BRS]
Genetics of Health and Disease [GHD]

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Physiology and Pathobiology of Organ Systems Fellowship Special Emphasis Panel [F10S]

Physiology and Pathobiology of Organ Systems

[Cardiovascular and Respiratory Sciences (CVR) Integrated Review Group]

[F10S Roster]

F10 reviews fellowship applications for basic and clinical aspects of respiratory, digestive, renal and cardiovascular systems (including hematology); musculoskeletal, oral, and skin sciences; and surgery, radiobiology and bioengineering. Approaches include clinical studies, animal models of disease, and in vitro studies of the physiology of these organ systems and of their function in health or disease. Examples of specific areas covered are listed below.

- Organ system physiology and pathobiology
- Experimental models of diseases
- Animal and clinical studies, including exercise physiology
- Toxicology related to digestive, respiratory, cardiovascular, musculoskeletal and renal systems
- Neural control of circulation
- Angiogenesis and hemostasis (platelets and coagulation)
- Hematopoiesis, myelopoiesis, and leukemogenesis
- Trauma and sepsis

Shared Interests:

With F02A (Behavioral Neuroscience): Fellowship applications concerning neurotoxicology may be appropriate for F02A; fellowship applications concerning toxicology of the renal, digestive systems, respiratory, or cardiovascular systems may be appropriate for F10.

With F05 (Cell Biology and Development): Fellowship applications that utilize stem or differentiated cells to elucidate fundamental aspects of cell structure, function and regulation may be reviewed in F05; fellowship applications that concern the structure and function of differentiated cells in a tissue, organ, or pathology context may be reviewed in F10.

With F06 (Endocrinology, Nutritional Metabolism, and Reproductive Sciences): Shared interests exist in the areas of exercise physiology, renal pathophysiology, and lipoprotein metabolism. Exercise physiology in the context of skeletal muscle functions related to insulin action, insulin resistance and type 2 diabetes may be assigned to F06; exercise physiology in the context of respiratory function and regulation may be assigned to F10. Studies that focus on effects of nutrient metabolism in diabetic nephropathy and other diabetes-induced metabolic abnormalities may be assigned to F06; studies that focus on the underlying pathophysiology of the process of renal derangement and of muscle physiology addressing the role of actin and myosin and other factors in muscle contractility may be assigned to F10. In addition, F10 may be assigned applications on renal transport mechanisms intrinsic to diabetic nephropathy, diabetes-induced renal pathology, diabetes-induced urology pathology, and organ or environmental toxicology. Studies that focus on the lipoprotein risk factors or the nutrient/metabolic fate of substances in the context of type 2 diabetes and obesity may be assigned to F06; studies that focus on lipoprotein metabolism in the context of coronary artery diseases, vessel wall biology, and pathogenesis of atherosclerosis may be assigned to F10.

With F07 (Immunology): Fellowship applications that have a considerable immune component, are related to broader issues in autoimmune disease etiology or transplant immunology, or that have a significant immunobiology component may be considered for review in F07; fellowship applications that emphasize effects on target tissue physiology may be considered for review in F10.

With F08 (Genomics, Genetics, DNA Replication, and Gene Expression): Fellowship applications with a focus on basic prokaryotic and eukaryotic genetics and molecular biology may be appropriate for F08; fellowship applications with a focus on physiology or pathophysiology that utilize genetic and molecular biological approaches may be appropriate for F10.

With F09 (Oncological Sciences): Fellowship applications relevant to the role of angiogenesis in cancer pathobiology may be assigned to F09; fellowship applications relevant to other aspects of angiogenesis may be assigned to F10.

F13 (Infectious Diseases and Microbiology): Fellowship applications that focus on pathogens or pathogenic mechanisms, even in specific tissues/organs, could be assigned to F13. When the focus of the application is the effect of infection on the organ, assignment could be to F10.

With F16 (Health and Health Related Behavior of Individuals and Populations): Fellowship applications that involve population-based, epidemiologic or behavioral studies of diseases, risks or protective factors, or studies of health care delivery systems would be appropriate for F16. Fellowship applications involving underlying mechanisms of disease states or the physiology or pathophysiology of organ systems would be appropriate may be appropriate for F10. Fellowship applications that involve population-based, epidemiologic or behavioral studies of diseases, risks or protective factors, or studies of health care delivery systems would be appropriate for F16.

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